

Mosquito Control Annual Report 2003



**Controlling Transmission of
Mosquito-Borne Illness Through
Reduction of the Mosquito Population**

CLARK COUNTY



Annual Report 2003

Controlling Transmission of Mosquito-Borne
Illness by Reducing the Mosquito Population

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An Overview

General Mosquito Control Information for Clark County

Formation of the Mosquito Control District

Authority

Mosquito control Districts are formed by the procedures outlined in Chapter 17.28 of the Revised Code of Washington (RCW). The Clark County Mosquito Control District was formed in November 1982 by general election.

Oversight

The Board of Trustees has oversight responsibility for the Clark County Mosquito Control District. The ten-member Board is composed of one member appointed by each County Commissioner for the county at large, and one member each appointed by and representing the cities and towns of Vancouver, Camas, Washougal, Ridgefield, La Center, Battle Ground, and Yacolt.

The Board of Trustees establishes policy; prepares, approves and reviews the annual budget; and approves expenditures for the Mosquito Control District. The Board contracts with Clark County Health Department for operation of the control activities. Contact Environmental Public Health services.

Contact Information

Location:	Clark County Health Department Environmental Public Health Services 1950 Ft. Vancouver Way Vancouver WA 98663
Mailing address:	Clark County Mosquito Control District PO Box 9825 Vancouver WA 98666-8825
Service Requests:	(360) 397-8430 (recording)
Telephone:	Cheryl Coast, Administrative Assistant (360) 397-8057

Objectives

The primary objective of mosquito control:

To provide a means of controlling transmission of mosquito-borne illness through reduction of the Clark County mosquito population.

Secondary objectives:

- Freedom from mosquito annoyance in homes and workplaces
- Increased efficiency of employees in outdoor occupations
- Increased use and enjoyment of outdoor recreational activities

Past Mosquito Control Treatment

Historically, toxic chemicals such as DDT were used to control mosquito populations throughout the United States. DDT was developed in 1873, but it wasn't until 1939 that effectiveness of DDT as an insecticide was discovered. The use of DDT increased enormously on a worldwide basis after World War II, primarily because of its effectiveness against the mosquito that spreads malaria and lice that carry typhus. The World Health Organization estimates that during the period of its use, approximately 25 million lives were saved. DDT seemed to be the ideal insecticide as it was cheap and of relatively low toxicity to mammals.

However, problems related to extensive use of DDT began to appear in the 1940's. Many species of insects developed resistance to DDT, and DDT was also discovered to have a high toxicity toward fish.

Current Mosquito Control Policy

The Board of Trustees has an adopted policy to control the mosquito population that strives to use organic control methods, which have the least adverse effect on people, wildlife, and the environment.

A great deal of progress has been made to use control agents specific to mosquitoes. A copy of the complete adopted policy is available on request.

Personnel

Board of Trustees

Name	Position
Mark Rees, Chair	District 3, Commissioner Pridemore
Raul Moreno, Vice Chair	City of Ridgefield
Tim Ross, Sec-Treasurer	City of Vancouver
Dean Lindgren, Trustee	City of Washougal
Mike Ciraulo, Trustee	City of Battle Ground
Debra Smith, Trustee	Town of Yacolt
Randall King, Trustee	District 1, Commissioner Morris
Roger Seekins, Trustee	District 2, Commissioner Stanton
Vacant	City of La Center
Vacant	City of Camas

Staff

Name	Position
Louis A. Dooley, RS, MPH	Director
Cheryl Coast	Administrative Assistant

Crew

Name	Position
Steve Kessler	Supervisor
Ken McMillan	Assistant Supervisor
Sam Adams	
Chris Lines	
Jim Martin	
Chuck Skov	
Dale Smith	
Warren Wyant	

Chapter **3**

The Work

Field Operations Summary

2003 was a learning year for the mosquito control district. There was a low snow pack, so we were anticipating lower river runoff levels; however, Bonneville Power Administration released enough water (to help salmon smolt on their journey to the ocean) to reach the eggs of the flood water mosquito.

We treated 260 acres with 1,908 lbs of Bti. We also identified some critical areas that will be treated with aerial application in the future. We are still working with the Ridgefield Wildlife Refuge to better deal with the mosquito problem in the refuge. We have identified areas on the refuge that can only be treated by aerial application, but at this time it is not allowed.

The trapping and identification program is going very well. We now have the knowledge and equipment to test adult mosquitoes for West Nile virus. We were also more involved with the treatment of catch basins/storm drains in 2003. The crew treated 4,328 of these throughout the county; these catch basins are a good source of water habitat for the Culex mosquito, which is one of the main vectors of West Nile virus.

The Floodwater Mosquito

This is the most prevalent mosquito in Clark County. It is a very aggressive mosquito, with a long flight range.

The Columbia River dictates the high waters in our area, so when there is a heavy snowfall, the spring runoff is high. When the Columbia rises, it not only backs up into its mosquito habitat, but also backs up almost all streams, rivers, and lakes to their floodwater mosquito habitat. Therefore, there is a direct link between the amount of snowfall and high water runoff in the Columbia River Basin, which includes British Columbia, Idaho, Montana, Oregon and Washington. Information provided by the National Weather Service and Bonneville Power Administration allows us to prepare for the

possibility of necessary treatment to control the floodwater mosquito. Joint aerial program work with Multnomah and Columbia Counties has been a tremendous help in controlling the floodwater mosquito in our area.

Retention Ponds

The retention pond program continued to grow in 2003, as several new ponds were added to the monitoring and treatment schedule. The already existing 151 ponds were also monitored and treated as needed. The ongoing retention pond program continues to expand yearly as Clark County provides the Mosquito Control District with updated information on the construction of new ponds.

Catch Basins/Storm Drains

In 2003 the crew treated 4,328 catch basins throughout the county with *Altosid*, in either briquette or pellet form.

West Nile Virus (WNV)

The District served as an auxiliary force to the Clark County Health Department bird surveillance program, and retrieved a number of reported birds from field locations. The transportation of birds for the dead bird surveillance program continued to be somewhat problematic, due to the distance to the laboratory in Pullman, Washington and the timing of needed transportation. Only four birds were deemed acceptable for analysis and sent to the state lab. All were negative, as was a single horse sample.

Culex pipiens, the mosquito vector that transmits the disease, breeds in stagnant water held in open containers (cans, pots tires, etc.). This *Culex* species is commonly present in Clark County, raising concern for future treatment demands.

The chance of contracting the disease is very low. Even in an area where mosquitoes have been found to carry the virus, very few mosquitoes (far less than 1%) are infected. If the mosquito is infected, less than 1% of people who get bitten and become infected will become severely ill. The risk of severe illness from any single mosquito bite is extremely low. Mosquito control districts and local county governments are taking precautions that include active sampling (surveillance) of mosquito populations to enhance state

and local government early detection systems and to target specific adulticide and larvacide applications.

Dead Bird Reporting Procedure

- If you find a dead crow or jay in “pristine condition” and not on or next to a roadway, do not throw it away.
- Call the Clark County Mosquito Control District telephone reporting line at 397-8430 to report the sighting. Leave information about the kind of bird sighted, the condition of the carcass, location of the bird and your name, address and telephone number.
- If you handle the carcass, wear gloves or pick the bird up using a shovel. Place it in a plastic bag and either leave it for our staff to pick up, or if it is not in good enough condition to test, dispose of the carcass in the garbage.
- Retrieved birds will be sent to a laboratory to be tested for virus.

Prevention of West Nile Virus

- Apply insect repellent sparingly to exposed skin. An effective repellent will contain 35% DEET (N,N-diethyl-meta-toluamide). DEET in high concentrations (greater than 35%) provides no additional protection.
- Spray clothing with repellent, since mosquitoes may bite through clothing. Follow manufacturer’s directions.

Response to Service Requests

- If you are experiencing a high number of mosquitoes, contact Clark County Mosquito Control District and leave a message on our service request line: 397-8430. We will send you information about personal protection against mosquitoes and how you can eliminate or reduce breeding around your home.
- If necessary, a staff member will contact you to request additional information about the problem.

2003 Service Requests

Summary of Service Requests

2003 saw a very large increase in service request calls over the number of calls in 2002, creating a very different profile than that of last year. The total number of calls during 2003 nearly quadrupled last year's total. The crew received 155 service requests during 2002; that figure jumped to 583 logged calls in 2003!

An email address (mosquito@clark.wa.gov) is available to allow the public increased access to information and service requests.

¹

Year	Mar-May	Jun	Jul	Aug	Sept	Totals
1986	20	263	217	34	0	534
1987	16	88	26	2	0	132
1988	27	46	36	14	2	125
1989	25	74	26	6	4	135
1990	26	13	99	10	0	148
1991	32	58	61	7	2	160
1992	31	11	6	1	0	49
1993	37	187	20	8	1	253
1994	21	15	11	3	0	50
1995	14	80	17	4	2	117
1996	14	27	21	4	1	67
1997	43	72	12	12	1	140
1998	18	120	53	3	2	196
1999	13	26	33	11	3	86
2000	31	12	8	6	2	59
2001	30	6	10	9	0	55
2002	21	65	32	25	12	155
2003	138	337	91	13	4	583
	557	1500	779	172	36	3044
Average	<u>Mar-May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sept</u>	Per Year
# calls	31	83	43	9.5	2	169

2003 Service Requests by Location

Location Summary

City	No. of Requests	Percent
Amboy	1	--
Battle Ground	23	4%
Brush Prairie	15	3%
Camas	17	3%
Heisson	1	--
La Center	10	2%
Ridgefield	161	28%
Vancouver	339	57%
Washougal	2	--
Woodland	3	1%
Yacolt	3	1%
Unknown	6	1%
Total	155	100%

Zip Code	No of Requests	Percent
98601	1	--
98604	23	4%
98606	15	3%
98607	17	3%
98622	1	--
98629	10	2%
98642	161	28%
98660	8	1%
98661	24	4%
98662	13	2%
98663	9	2%
98664	11	2%
98665	89	15%
98671	2	--
98674	3	1%
98675	3	1%
98682	12	2%
98683	8	1%
98684	7	1%
98685	144	25%
98686	14	2%
Unknown	6	1%
Totals	584	100%

Control Methods

Control Agents

Altosid (*Methaprime*)

Altosid is a long-term, cost-effective, and environmentally responsible larvacide that prevents mosquito larvae from becoming breeding, biting adults. *Altosid* contains an insect growth regulator that interferes with normal mosquito development. It will not upset the food chain or impact fish and other non-target species. ¹

Bti (*Bacillus thuringiensis* var. *Israelensis*)

The Mosquito District uses *Bti*, an approved strain of bacteria affecting only mosquito and black fly larvae, thus sparing other insects. It is a biological control method and only effective in the early stages of mosquito larvae development, so timing of application is critical. *Bti* is considered harmless to non-target fauna, humans, and the environment. It is the only control agent used on wildlife reservations.

Goldenbear Oil (GB; GB-1111)

Goldenbear Oil is special thin oil used to control mosquito larvae. It is sprayed onto the water surface when mosquito larvae are found. The oil spreads rapidly over the water surface, forming a thin monomolecular surface film. The larvae are then unable to break the water surface with their breathing tube, thus suffocating the larvae. *Goldenbear Oil* is effective for all stages of mosquito larvae. A few days after application, the film will have dissipated from the water by evaporation. *Goldenbear Oil* does not have a long-lasting control period and must be reapplied as needed. It is not used in water containing fish.

Biomist (*Permethrin*)

Biomist is used to control the adult mosquito population. It is fogged early in the morning or late in the afternoon when the mosquito is actively seeking a blood meal. The active ingredient in *Biomist* breaks down in fewer than four hours in sunlight. ²

Vectolex (*Bacillus sphaericus*)

Vectolex is a larvacide that prevents maturation of larvae to adult mosquitoes. The active ingredient is a common bacterium, *bacillus sphaericus*. Like *Bti*, this product is harmless to non-specific flora, fauna, humans and the environment.

¹ www.altosid.com

² www.ultranet.com/~ncmcp/scourge.htm

Aerial Application

Aerial application is a very efficient and affordable way to control mosquito water, using a fraction of the manpower needs. A total of 1,908 lbs. of *Bti* granular larvacide was used during 2003 to treat 260 acres of mosquito breeding sites in Clark County.

Areas Treated by Aerial Application in 2003

Date	Acres	Lbs. BTI	Area
6/3/03	11	80	LaFrambois Road, south shore
6/3/03	24	170	Alcoa Trail
6/3/03	40	280	Felida moorage
6/3/03	25	180	Vancouver Lake, green gate north
6/3/03	13	90	Vancouver Lake, green gate south
6/4/03	25	180	3rd Street Loop, Camas
6/4/03	8	60	Race Track, Washougal
6/4/03	20	160	Reed Island
6/5/03	23	175	Morgan Long meadow gate west
6/5/03	2	15	Morgan Long meadow pond
6/5/03	30	225	Morgan Long meadow flood plain
6/5/03	2	15	Along railroad track south of bridge
6/5/03	6	45	Sevier Road Creek west of railroad
6/5/03	4	30	Flume Creek east of railroad below barn
6/5/03	2	15	Pekin Ferry west
6/5/03	15	113	Peninsula, east & north fork Lewis River
6/5/03	2	15	Peninsula, Lewis River forks, west of I-5
6/5/03	8	60	Bridge 12, 7000 block NW 179 th Street
Total	260	1908	

Summary of Treatment Products Used in 2003

Product	Each	Gals	Lbs	Oz
Altosid (briquette)	411			
Altosid (pellet)			116.2	
Biomist		46.3		
Bti Granular			2493	
Goldenbear Oil		11.8		
Vectolex CG			29	

FAQ

Frequently Asked Questions About Mosquitoes

What is a vector, and why is a mosquito considered one?

A vector is an insect, rodent, or other animal that is capable of harboring a disease or transmitting it to humans. Any insect that feeds on blood has the potential to transmit disease organisms from human to human. The mosquito is a vector because certain species can carry and transmit viruses through their bite. A female mosquito passes contractible diseases such as yellow fever, malaria, dengue fever, and encephalitis to her eggs. Some viruses currently of concern to people in the western United States are West Nile virus and St. Louis Encephalitis. Mosquitoes also transmit Western Equine Encephalitis to horses, and can transmit parasites such as heartworm to pets.

Why do mosquitoes bite?

Male mosquitoes cannot bite, but females do. The female mosquito needs a blood meal, as food, to obtain the protein necessary to fertilize and develop her eggs. After a blood meal is digested and the eggs are laid, the female again seeks a blood meal to produce a second batch of eggs. Depending on her stamina and the weather, she may repeat this process several times without mating again.

Both female and male mosquitoes feed on plant nectar and juices; the male feeds solely on these, and he lives only a short time after mating. Female mosquitoes do not actually feed on blood for nourishment of their own bodies; it is actually the nectar of flowers that provides sugar to power mosquitoes' flight muscles.

How does a mosquito spread the diseases it carries?

Mosquitoes spread the diseases they carry through a mosquito/bird cycle. The birds serve as host reservoirs, but humans and animals, once bitten, may become end points, or "dead-end hosts" of a mosquito-borne disease.

A bird-mosquito cycle keeps the transmission of the diseases going; an infected bird either dies or becomes immune in days, but a mosquito may feed on the bird when it is infectious, then bite another bird and transmit the disease.

The virus increases as much as a million-fold in the mosquito until it becomes a lethal injection. As the active mosquito “season” progresses, mosquitoes are increasingly attracted to warm blooded animals such as horses or humans. Mosquito-borne diseases are also caused when a mosquito bites an infected person; human parasites enter her body and complete their own lifecycle there. Once she ingests infected blood, she will contract the disease within ten days. After she lays her eggs, she bites again, seeking a second blood meal for the next round of eggs, and transmits the fully-developed parasites to the next host.

What attracts mosquitoes to animals and humans?

Mosquitoes are apparently attracted to host animals by moisture, lactic acid, carbon dioxide, body heat, and movement. If biting insects can see you, they will bite; mosquitoes can see humans within approximately 30 feet. Light colors should be worn during the active “biting season” because mosquitoes are attracted to dark colors.

Why do some locations have mosquito annoyance problems year after year?

Habitat!

Floodwater mosquitoes lay eggs in the wet soil of receding waters and rivers, and can lay dormant for years, then hatch at a future time when the water rises.

Other mosquito species lay their eggs in standing water. Public locations that collect water or have standing or slow-moving surface water year-round, such as backwater areas of rivers and lakes, ponds, and neighborhood catch basins can become ideal mosquito-breeding grounds.

Areas on private property that hold water such as clogged rain gutters, tree holes, old buckets or other containers, tires holding stagnant water, untended pet dishes and fishponds are breeding sites. Cleaning up these areas and eliminating sources of standing water will reduce risk of mosquito nuisance.

Reporting Mosquito Nuisances

To Report a Problem or Request Control Services

Ways to request mosquito control assistance:

- Call the service request line (March 1-October 1) – (360) 397-8430
- Call Clark County Health Department – (360) 397-8057
- Fax – Attention: Mosquito Control (360) 397-8057
- E-mail mosquito@clark.wa.gov

When Calling to Request Service

When reporting a mosquito nuisance it is very important to give complete information. This allows for timely response by the Clark County Mosquito Control crew. Please be prepared to leave the following information in your message:

- Your name
- Your mailing address
- Contact telephone with best times to call
- Fax number, if available
- E-mail address, if available
- Location of the problem
- Description of the problem

Following your request, a packet of mosquito control information will be sent to you to help you reduce mosquito habitat around your home. It may be helpful for you to draw and return to our office a map showing the problem location.

Clark County Mosquito Control District may visit reported sites to assess mosquito activity and breeding, may treat public areas experiencing problems, and may advise residents about how to reduce the mosquito breeding around their homes. Because of legal restrictions, the Mosquito Control crew cannot fog neighborhoods or private residences.

Mosquito Resources

Additional Information about Mosquitoes

Links to Web sites about mosquitoes, how to control and prevent them, and mosquito control organizations:

www.nwmvca.org

Northwest Mosquito & Vector Control Association

www.mosquitoes.com

SC Johnson, the maker of "OFF" mosquito repellent

www.mosquito.org

American Mosquito Control Association (AMCA)

www.cdc.gov/ncidod/dvbid/westnile/index.htm

Centers for Disease Control & Prevention – West Nile virus information

www.doh.wa.gov/ehp/ts/Zoo/WNV/WNV.html

Washington State Department of Health West Nile virus site

www.pested.psu.edu

Penn State College of Agricultural Services

<http://whyfiles.org/016skeeter/>

Mosquito Bytes, interesting facts about mosquitoes

<http://www.howstuffworks.com/mosquito.htm>

How Stuff Works site

<http://www.enature.com/fieldguide/showSpeciesSH.asp?curGroupID=4&shapeID=1017&curPageNum=9&recnum=IS0064>

E-Nature.com information about the mosquito lifecycle

<http://www.epa.gov/pesticides/factsheets/skeeters.htm>

Environmental Protection Agency (EPA) fact sheet about topical and chemical controls